

Infiltration Protocol

Field Guide

Task

To determine the rate at which water soaks into the ground as a function of time

What You Need

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| <input type="checkbox"/> Infiltrimeter (see advanced preparation section) | <input type="checkbox"/> Block of wood |
| <input type="checkbox"/> Buckets or other containers to transport a total of at least 8 L of water to the site | <input type="checkbox"/> Hammer |
| <input type="checkbox"/> Ruler | <input type="checkbox"/> Three soil sample containers suitable for soil moisture measurement |
| <input type="checkbox"/> Waterproof marker | <input type="checkbox"/> Grass clippers |
| <input type="checkbox"/> Stop watch or watch with a second hand | <input type="checkbox"/> Funnel |

In the Field

1. Clip any vegetation (grass) to the ground surface and remove all loose organic cover over an area just larger than your largest can. Try not to disturb the soil.
2. Starting with the smaller can, twist the cans 2 - 5 cm into the soil. A hammer may be used to pound the can into the surface. If you must use a hammer, a block of wood should be used between the hammer and the top of the can to distribute the force of the hammering. Do not hammer so hard that the can crumples.
3. Complete the upper section of the *Soil Infiltration Data Sheet*. If you are using a stop watch, start it.
4. Pour water into both rings. Maintain a level in the outer ring approximately equal to the level in the inner ring. Note that the water level in the outer ring tends to drop more quickly than that of the inner ring. In the inner ring, pour water to just above the upper reference band.
Note: The outer ring should not be leaking water to the surface around its rim. If it is, start over in another location, push the outer ring deeper into the soil or pack mud around its base.
5. As the water level in the inner ring reaches the upper reference mark, read the stop watch or note the time to the second. This is your start time. Record this time on the *Infiltration Data Sheet*. During the timing interval, keep the water level in the outer ring approximately equal to the level in the inner ring, but be careful not to pour water into the inner ring (using a funnel can help) or to let either ring go dry.
6. As the water level in the inner can reaches the lower reference mark, record the time as your end time.
7. Calculate the time interval by taking the difference between the start and end times. Record this interval on your *Infiltration Data Sheet*.

8. Continue repeating steps 4 - 7 for 45 minutes or until two consecutive interval times are within 10 sec. of one another. Some clays and compacted soils will be impervious to water infiltration and your water level will hardly drop at all within a 45-minute time period. In this case, record the depth of water change, if any, to the nearest mm. Record the time at which you stopped your observations as the end time. Your infiltration measurement will consist of a single interval.
9. Remove the rings. WAIT FIVE MINUTES.
10. Measure the near-surface (0 - 5 cm depth) soil moisture from the spot where you just removed the rings. Follow the *Gravimetric Soil Moisture Protocol*. You only need take one sample.
11. Make two other infiltration measurements within a 5 m diameter area. These measurements can be done at the same time using other groups or over several days (if the near-surface soil water content is not changed by rain). It is not critical that multiple runs have the same number of reading sets, but do not submit runs that are incomplete (e.g. a run that was cut short due to lack of time). If you take more than three sets of measurements, submit your three best sets.